

MTH 307: Programming and Data Structures

Homework III

(Due 25/02)

1. What is the output produced by each of the following program fragments.

(a)

```
for(i = 5, j = i - 1; i > 0, j > 0; --i, j = i - 1);
printf("%d", i);
```

(b)

```
for(i = 10; i >= 1; i /= 2);
printf("%d", i++);
```

(c)

```
i = 9384;
do {
printf("%d", i);
i /= 10;
} while (i > 0);
```

(d)

```
i = 1;
while (i <= 128) {
printf("%d", i);
i *= 2;
}
```

(e)

```
sum = 0;
for(i = 0; i < 10; i++) {
if (i % 2) continue;
sum += i;
}
```

2. Write a C program for the following:

(a) Accepting a month and year from the user and printing the calendar for the month.

(b) Accepting a positive integer $n > 5$ from the user and printing all Pythagorean triplets involving positive integers $\leq n$. Note that equivalent triplets should be printed only once. (For example, (4,3,5) and (3,4,5) are equivalent.)

(c) Accepting a sentence from the user and computing the number of characters in it without using the string variables.

(d) Accepting the first and last name from the user and displaying the last name, a comma, and then the first initial, followed by a period. Do not use string variables.